14. BOAT PUMPOUT

The discharge of untreated sanitary waste from boats into marine waters is a known pollution problem. Studies have documented a correlation between boating activity and elevated levels of fecal coliform, especially in areas of poor water circulation. In harbors where boats congregate, the total amount of sewage pumped overboard illegally may be considerable. Protected harbors, which are favored refuges for boaters, often have poor tidal flushing, making them particularly vulnerable to pollution from overboard discharges.

Sewage from urban sources and boats can pollute shellfish that are harvested and sold for human consumption. Coastal water quality is closely monitored by measuring levels of fecal coliform, which are used to indicate the amount of potential pathogens in the water column. Areas where fecal coliform reaches unsafe levels are closed to shellfishing. Swimmers may be exposed to viruses in these areas as well.

Since the adoption of the Clean Water Act in 1972, it has been illegal to discharge untreated waste into coastal waters. Similarly, under Maine law, it is illegal to discharge sewage or any other pollutants from boats into the inland waters of the state or into the ocean within three miles of the mainland.

Legally, waste has to travel through a Marine Sanitation Device (MSD), before being discharged; or it must be stored in a holding tank until it can be pumped out or discharged three miles offshore. In 1989, the Maine legislature required that all marinas serving coastal waters provide, directly or through contractual agreements, facilities to remove sanitary waste from boat holding tanks. This applies to any commercial facility with slip or mooring capacity for 19 or more vessels exceeding 24 feet in length. As of 1996, there were 26 pumpout facilities available at marinas around the state.

The Maine DEP, with funding from U.S. Fish and Wildlife, is providing grants to marinas, municipalities and boat clubs for new dockside pumpout facilities, and has funded the purchase and operation of a mobile pumpout boat on Casco Bay. The 75% to 25% matching grants are available through the Clean Vessel Act grant program. For information on the grant program, write the Maine DEP, 17 State House Station, Augusta, ME 04333.

DUMP STATIONS

Vessels utilizing portable toilet facilities require dump stations to dispose of accumulated sewage. A dump station consists of a receiving facility for sewage from portable toilets used on vessels and includes associated equipment and a storage tank. The device is typically comprised of a receiving basin with a lid (to control odors and insects), with provisions for rinsing the basin after the portable toilets are emptied. The device may discharge directly to a municipal sewer, a storage tank, or to a vehicle for transport.

PUMPOUT FACILITIES

Pumpout Installation

Pumpout facilities, whether mobile or fixed, are used to remove sanitary wastes from vessels for appropriate collection and treatment. Fixed pumpout facilities, including a holding tank and pump, are usually located at the end of a pier or dock, often on or near the fueling pier. Vessels access the facility by approaching and securing to the dock or pier. Mobile facilities, rather than being centrally located, consist of a small vessel with a holding tank and pump, which serves boats at their moorings or slips. Pumps, which are typically electrically driven, pump wastes to a central storage tank through a flexible hose with a universal fitting attached to the boat deck. Wastes are then hauled off site for treatment at a wastewater treatment plant or may, in some cases, be treated on-site using properly designed septic systems. Note that the chemicals used in vessel holding tanks may adversely affect the function of typical septic systems.

Every marina facility that stores boats greater then 25 feet in length is encouraged to install a pumpout system because they may be more readily used if available. Customers may want to keep their boats moored or docked in areas where they can easily pump out their holding tanks or empty portable toilets.

Different types of manufactured pumps have individual characteristics that need to be considered when deciding which is best for a particular site. The basic criteria used in pump selection are the pump's capacity and the distance, both in height and length, that it can move waste through a pipe. Other considerations may include durability and ease of operation and maintenance.

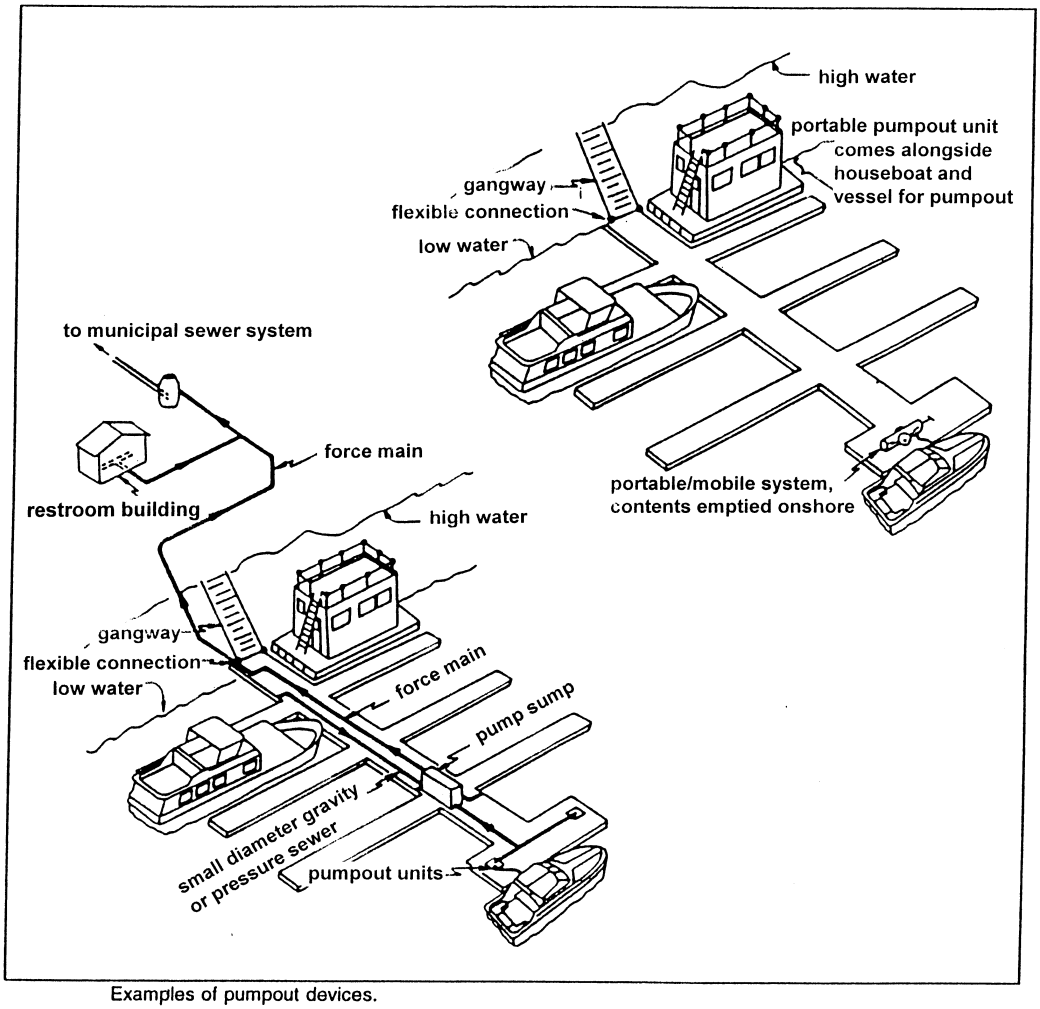
Pumpout stations can either be fixed, mobile, or remotely operated. Mobile pumpouts can be attached to a pumpout vessel and used in the harbor area or attached to a cart and used within the marina. Portable systems include a pump and an small storage tank. Mobile pumpout boats work particularly well in areas with a large number of boats on moorings, such as Casco Bay. Aside from choosing the type of pumpout most suitable for your facility, two other considerations are important: the location of the pumpout and the disposal of the collected waste.

Fixed stations are permanently mounted in a location within the marina in an area that is accessible to boaters, generally near a fueling dock. Remote stations provide a direct hookup to multiple locations or each slip within a facility. These systems are expensive, but provide a convenient means for customers to pump out their holding tanks, particularly if they live aboard their boats. Fixed and remote stations must be directly attached to either a sewer line or a holding tank. Less common are slip-side systems which provide continuous wastewater collection; these are most often used for resident slips.

The cost to install a pumpout system ranges greatly, depending on the type and location within the facility. According to a 1992 EPA report, the average cost to

install a pumpout facility is $5,323, and can range in cost from zero to $50,000. Total costs include engineering and permit fees; pumpout machinery and pipes; and excavation and installation charges.

A helpful guide on the installation and operation of pumpout stations has been completed by the Maine Coastal Program. The guidebook provides a partial list of portable, stationary, and remote pumpout units available, according to manufacture's model. A copy of Marine Sewage Pumpout Facilities: A Guidebook for Marinas and Municipalities on Maine Waters can be obtained by writing the Maine Coastal Program, Maine State Planning Office, 38 State House Station, Augusta, ME 04333.



Examples of pumpout devices.

FIGURE 12. PUMPOUT FACILITIES

Pumpout Operation

Make the pumpout station user friendly. Keeping the pumpout boat or area neat and tidy will encourage use and improve safety. If the pumpout is self-service, be sure the directions are clearly posted and all the necessary equipment for using the pumpout is in close proximity. If an employee is operating the pumpout, make sure that he or she is knowledgeable about the operation

procedures as well as the rules pertaining to marine sanitary devices (MSDs) and no-discharge areas.

Once a pumpout is installed and operating properly, only minimal maintenance should be required. The pumpout manufacturer should be able to provide you with information on servicing the pump and pipes. Maintain a regular inspection and maintenance schedule for the pumpout station; failing to do so may make the pump station fail.

Work with local and state governments to declare your harbor a no-discharge area once the required number of pumpout facilities are installed. By the federal definition, no-discharge areas are zones of water that require greater environmental protection – where even the discharge of treated sewage could be harmful. In these areas it is illegal to allow sanitary waste, treated or untreated, to be discharged into the water.

In no-discharge areas, the only onboard marine sanitation device that can legally be used is an approved Type III MSD (with a holding tank). Type I and II MSDs (on board treatment systems using macerator/chlorinators) cannot be used. Regardless of what type of MSD is on board in no-discharge areas, overboard Y valves must be secured. When declared and enforced, a no-discharge area designation can significantly reduce the amount of bacterial contamination being introduced by the illegal discharge of MSDs.

If you operate a pumpout facility, install adequate signs to identify the pumpout station and its location. Standard signs are available through the EPA's Near Coastal Waters Program. You should obtain these signs and post them near each pumpout station.

Other pertinent information should be posted, such as hours the of operation and fees. If the pumpout is self-service, be sure that the operating instructions are clearly posted. Informational signs and displays should also be posted in the ship's store or wherever your tenants congregate. If your pumpout station serves the harbor area, consider posting signs or posters in neighboring marinas and mooring areas directing boaters to the pumpout station and providing pertinent information.

Monitor boaters' use of pumpout services. The Clean Water Act sets the standards for MSD operations and provides enforcement power to some federal and state entities. Local harbormasters may also enforce MSD requirements and fine violators, when necessary. Work with your harbormasters so they understand the importance of enforcing existing rules and regulations. If you know of any violations, report them immediately to the proper authority. To enforce MSD requirements:

- Place a dye tablet in the holding tanks that will be released if an overboard discharge occurs;
- Inspect Y valves to ensure they are sealed; and
- Inspect MSDs and ensure they are properly operating

ONSHORE WASTEWATER DISPOSAL FACILITIES

Pumpout facilities and on-shore wastewater disposal facilities can contribute to nonpoint source pollution in coastal waters if they are not used and maintained properly. The following management practices should be employed for all pumpout facilities, including fixed, mobile or slip-side pumpouts:

- Hoses, fittings, pumps, and other accessory equipment should not be washed on the pier, dock or shore so that rinse water discharges directly into the marina basin or into surface or ground water.

- Sanitary waste from vessels should not be discharged to an on-site septic system unless the system has been specially designed to handle waste from vessels.

- Waste holding tanks, if they are above ground, should be secured and have a secondary containment area, including a concrete pad. This containment area should be inspected weekly to check the integrity of the tank and any connecting pipe and fittings.

- Pumpout facilities should only be operated by trained marina personnel.

- Pumpout facilities and regulations should be clearly posted at the marina. Fees charged should encourage rather than discourage the use of the facilities. Where these facilities are convenient to fueling facilities, the cost of maintaining pumpouts can be offset by fuel sales.

SEPTIC SYSTEMS

In cases where no municipal sewer system is available, or connection to existing sewer lines is too costly, on-site wastewater treatment using conventional septic systems is common. When properly sited, designed, and maintained, septic systems can provide adequate treatment of sanitary wastewater. Local and state health regulations should ensure the proper siting and design of on-site septic systems. However, these systems are often not properly maintained over the long term. Alternative on-site wastewater treatment systems (e.g. recirculating sand filters, RUCK system, etc.) may need to be considered to enhance phosphorus or nitrogen removal on sites adjacent to poorly flushing coves, embayments, or harbors where nutrients pose a significant problem. Following are recommended practices to ensure the proper long term functioning of septic systems:

- Unless specifically designed to handle sanitary waste from vessels with holding tanks, such waste should not be discharged to septic systems.

- Provide a system that serves the combined flows from on-shore bathroom facilities and the pump-out facilities, so that MSD wastes are diluted by ordinary domestic sanitary flows.

- Provide two septic tanks in series to help segregate solids in the first tank and increase retention time in the system, allowing for more complete waste decomposition.

- Do not pave, allow vehicular traffic, or dispose of dredge spoils over septic tank leachfields, unless the disposal systems are specifically designed for this loading.

- Stormwater runoff, including runoff from rooftops and pavement, should be directed away from the leachfield to prevent inundating the field.

- Tanks should be pumped out regularly to prevent overflows and clogging of the leachfield.

- Prohibit the disposal of fats, solvents, oils, disinfectants, paints, poisons and other hazardous materials, diapers and other similar products in drains or toilets.

- Promote water conservation to reduce the total waste flow to the system.

- Post signs notifying patrons of pertinent rules and regulations.

- Sanitary sewage facilities should be provided at all existing marinas, and marina expansions should not be permitted without adequate septic systems in order to avoid the necessity for on-site storage and disposal in coastal areas.

- Provide clean, conveniently located shore-side bathroom facilities to reduce marina patrons' reliance on vessel facilities while in port.

- Provide facilities for transferring sewage from vessels to shore-side storage and disposal, pumpout facilities to empty vessel holding tanks, and dump stations to dispose of sewage from portable toilets used on vessels.

- When on-site disposal is necessary, marinas should provide buffer areas between sewage disposal systems and waterbodies, and reserve suitable upland soils for leaching fields.